

The following claim listing supersedes all previous claim listings in this application.

**CLAIM LISTING**

24. (currently amended) A method of manufacturing a calcium fluoride crystal, said method comprising:

mixing a raw material of calcium fluoride and a scavenger at a predetermined proportion to obtain a first mixture;

fusing the first mixture in a crucible to refine the raw material of calcium fluoride;

mixing the refined calcium fluoride and a scavenger at a predetermined proportion, to obtain a second mixture; and

fusing the second mixture in a crucible to cause growth of a calcium fluoride crystal;

wherein said method includes a baking process ~~for at least one of the first~~  
before fusing the first mixture or a baking process after fusing the first mixture  
but before formation and fusing of the second mixture, and second mixtures  
wherein to be performed before it is or they are fused in the crucible, and said  
baking process is carried out as a separate process before the refining process and the growth process, by using a porous baking crucible different from the refining crucible and the growth crucible.

25. (previously presented) The method of manufacturing a calcium fluoride crystal according to claim 24, wherein the first mixture contains a scavenger of 0.001 to 0.1 mol%.

26. (previously presented) The method of manufacturing a calcium fluoride crystal according to claim 24, wherein the first mixture contains a scavenger of 0.0005 to 0.05 mol%.
27. (previously presented) The method of manufacturing a calcium fluoride crystal according to claim 24, wherein the transition density in the calcium fluoride crystal is not greater than  $1 \times 10^5 / \text{cm}^2$ , and wherein dispersion of the transition density is not greater than  $\pm 5 \times 10^4 / \text{cm}^2$ .
28. (previously presented) The method of manufacturing a calcium fluoride crystal according to claim 24, wherein in said baking process, the mixture is heated in a vacuum ambience or a reduced pressure ambience.
29. (previously presented) The method of manufacturing a calcium fluoride crystal according to claim 24, wherein in said baking process, the mixture is heated in a gas-flow ambience in which a gas flows so as to promote removal of a substance adhered to the mixture.